

FIJI MATHEMATICS ASSOCIATION



FIJI MATHEMATICS COMPETITION (FMC) YEAR 10

Wednesday 6th September 2017

Time Allowed: 1 Hour 15 minutes

Note:

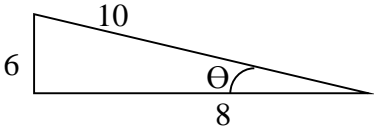
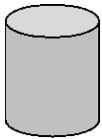
Calculators are NOT permitted.

Diagrams are NOT drawn to scale.

Instructions:

1. Print your **Name** in the space provided and Shade the circle corresponding to your **Year** on the answer sheet.
2. Shade the circle corresponding to your answer with dark pencil on the answer sheet provided.
3. Multiple answers **will not be** accepted.


Year 10

- If $a = 3$, the value of $a^3 - 4$ is
A. 5 B. 23 C. 27 D. 9 E. 2
- If $(a * b) * c = a * (b * c)$, then the operation $*$ is
A. closed B. commutative C. associative D. distributive E. operative
- Which of the following is a perfect Square?
A. $x^2 + 4x + 16$ B. $x - 16$ C. $x^2 - 16$ D. $x^2 + 16$ E. $x + 16$
- If $f(x) = x^2 - 7x + 2$, What is $f(2)$?
A. -10 B. -8 C. 4 D. 32 E. 12
- Which of the following equations can be used to find the value of Θ in the diagram given below?

 A. $\sin \Theta = \frac{8}{10}$ B. $\cos \Theta = \frac{10}{8}$ C. $\sin \Theta = \frac{6}{10}$ D. $\cos \Theta = \frac{6}{10}$ E. $\tan \Theta = \frac{8}{10}$
- When simplified the expression $(2x - 3) - (x - 4)$ is
A. $x - 7$ B. $x + 1$ C. $x^2 + 7$ D. $x^2 - 1$ E. $2x^2 - 7$
- The angle bisectors of a triangle meet at the point called
A. Circumcentre B. Orthocentre C. Incentre D. Centroid E. Axis
- If you use mobile phone during weekdays, you are charged \$2.10 a minute. During weekends you pay only 30 cents a minute. How much do you save by talking for 2 minutes in the weekend rather than on a weekday?
A. \$6.00 B. \$4.10 C. \$3.60 D. \$1.80 E. \$0.60
- Solve $(p - 2)^2 = 9$
A. 20 B. 11 C. 7 D. 5 E. 1
- Find the volume of the cylinder shown if the diameter is 4 cm and the height is 7 cm. (Use $\pi = \frac{22}{7}$)

 A. 154 cm^3 B. 44 cm^3 C. 88 cm^3 D. 616 cm^3 E. 14 cm^3
- The mean of 12 score is 5. A 13th score of 18 is added. What is the new mean?
A. 12.5 B. 12 C. 7 D. 5 E. 6
- The expression $16 - 4x^2$ when completely factorised is equal to
A. $4(4 - x^2)$ B. $4(x^2 - 4)$ C. $4(2 + x)(2 - x)$ D. $4(x + 2)(x - 2)$ E. $4x - 2$
- The values of x that make the equation $x^2 - 4 = 0$ **true**, are
A. $\{-2, 2\}$ B. $\{-2, 0\}$ C. $\{0, 2\}$ D. $\{-4, 4\}$ E. $\{2, 4\}$

Year 10

14. Anjelin spent \$42 for a pair of shoes. This was \$14 more than the amount she spent for a dress. She also bought a handbag which was half the price of the price of the shoes.

What was the total amount she spent?

- A. \$90 B. \$105 C. \$91 D. \$100 E. \$84
15. Calculate the length of the rectangle if the width is 10.5cm and the perimeter is 45 cm
- 
- A. 12 cm B. 10 cm C. 14 cm D. 12.5 cm E. 15 cm

Use the information given below to answer Questions 16 and 17.

The distances in metres are given for 7 athletes for a shot put throw.

{12.6, 13.9, 13.7, 14.2, 14.1, 13.7, 14.3 }

16. What is the median distance thrown by the athletes?
- A. 12.6 B. 13.7 C. 13.9 D. 14.1 E. 14.3
17. The mode is
- A. 12.6 B. 13.7 C. 13.9 D. 14.3 E. 14.2
18. Which of the following is the correct explanation of the Pythagoras Theorem?
- A. The sum of the squares of two sides is equal to the square of the longest side of a right angled triangle.
- B. The sum of the squares of two sides is equal to the square of the longest side of any triangle.
- C. The length of the longest side equals the sum of the other two sides.
- D. The length of the hypotenuse is always less than the other sides
- E. $a^2 + b^2 = h^2$
19. A mathematics examination was conducted in two sessions. In the morning session, 25 students took the test. The mean score was 72. In the afternoon session, 35 students took the test and the mean score was 84. What was the mean of the combined set of scores for the 60 students?
- A. 72 B. 80 C. 79 D. 84 E. 90
20. A normal die has 6 equal faces marked with the numbers 1 to 6. If the die is thrown once, What is the probability that the top face has an even number?
- A. $\frac{1}{6}$ B. $\frac{1}{2}$ C. $\frac{1}{3}$ D. 1 E. $\frac{5}{6}$
21. Solve $\frac{2x}{3} - \frac{1-x}{2} = 3$
- A. 7 B. 2 C. -3 D. 3 E. 6

Use the following information to answer Q22 and Q23

The graph of $5 = 2y + 4x$ cuts the x axis at point A and the y axis at point B.

22. Find the coordinates of point A.

- A. $(0, \frac{5}{4})$ B. $(0, \frac{5}{2})$ C. $(\frac{5}{2}, 0)$ D. $(\frac{5}{4}, 0)$ E. $(\frac{5}{2}, \frac{5}{4})$

23. Calculate the gradient of line AB.

- A. -2 B. 2 C. -5 D. 3 E. -3

24. The exact value of $(\frac{16}{25})^{\frac{1}{2}}$ is

- A. $\frac{2}{5}$ B. $\frac{4}{5}$ C. $\frac{5}{4}$ D. $\frac{4}{25}$ E. $\frac{8}{25}$

25. Simplify $\frac{x^2 + 2x}{8} \div \frac{x+2}{16}$

- A. $x + 2$ B. x C. $2x$ D. $x - 2$ E. $x + 4$

26. The marks scored by some students are given below:

Mark	10	20	30	40
frequency	1	4	9	6

Calculate the mean score

- A. 25 B. 35 C. 40 D. 15 E. 30

27. $\frac{(4m^3n^2)^3}{(2mn)^4}$ When simplified is

- A. $3m^5n^2$ B. $3m^2n^2$ C. $64m^5n^2$ D. $4m^2n^2$ E. $4m^5n^2$

28. How many pieces of string $1\frac{2}{3}$ of a metre long can you cut from a 50 m roll?

- A. 15 B. 20 C. 25 D. 30 E. 40

29. What percentage is 30 of 40?

- A. 75 % B. 0.75% C. 25% D. 133 % E. 50 %

30. A restaurant has 12 tables set outside and another 36 inside. Which of the following number sentence solves the number of legs the tables have altogether?

- A. $12 \times 4 + 36$ B. $36 \times 4 + 12$ C. $(12 + 36) \times 4$
D. $36 + 12 \times 4$ E. $12 + 29 \times 4$